Innovation in the
Multi-Screen World

Installation Manual

Vega Video Router

96 and 192 port fully asymmetric Video Routers

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Information and Notices

About this Manual

This manual describes the installation of the Vega 2U and 4U Video Routers.

Refer to the Vega User Manual and the Vega Router Control manual for details on configuring the router hardware and software panels.

If you have any questions regarding the installation and setup of your product, please refer to the following Customer Service contact details.

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1. Safety

1.1 Explanation of Safety Symbols

Explanation of Safety Symbols

GB

This symbol refers the user to important information contained in the accompanying literature. Refer to manual.

This symbol indicates that hazardous voltages are present inside.
No user serviceable parts inside.
This unit should only be serviced by trained personnel.

Safety Warnings

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVERS
NO USER SERVICEABLE PARTS
REFER SERVICING TO QUALIFIED
PERSONNEL ONLY

Servicing instructions where given, are for use by qualified service personnel only.
To reduce risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.
Refer all servicing to qualified personnel.

- **To reduce the risk of electric shock, do not expose this appliance to rain or moisture.**
- **Always ensure that the unit is properly earthed and power connections correctly made.**
- **This equipment must be supplied from a power system providing a PROTECTIVE EARTH ⏚ connection and having a neutral connection which can be reliably identified.**
- **The power outlet supplying power to the unit should be close to the unit and easily accessible**

Power connection in countries other than the USA

The equipment is normally shipped with a power cable with a standard IEC moulded free socket on one end and a standard IEC moulded plug on the other. If you are required to remove the moulded mains supply plug, dispose of the plug immediately in a safe manner.

The colour code for the lead is as follows:

GREEN/YELLOW lead connected to E (Protective Earth Conductor)
BLUE lead connected to N (Neutral Conductor)
BROWN lead connected to L (Live Conductor)

Caution If the unit has two mains supply inputs ensure that both power cords are plugged into mains outlets operating from the same phase.

Légende :

F

Ce symbole indique qu'il faut prêter attention et se référer au manuel.

Ce symbole indique qu'il peut y avoir des tensions électriques à l'intérieur de l'appareil. Ne pas intervenir sans l'agrément du service qualifié.

Précaution d'emploi :

ATTENTION
RISQUE DE CHOC ELECTRIQUE
NE PAS RETIRER LE COUVERCLE
NE PAS INTERVENIR SANS
L'AGREMENT DU SERVICE
QUALIFIE

Les procédures de maintenance ne concernent que le service agréé. Afin de réduire le risque de choc électrique, il est recommandé de se limiter aux procédures d'utilisation, à moins d'en être qualifié. Pour toute maintenance, contacter le service compétent.

- **Pour réduire le risque de choc électrique, ne pas exposer l'appareil dans un milieu humide.**
- **Toujours s'assurer que l'unité est correctement alimentée, en particuliers à la liaison à la terre.**
- **La source électrique de cet équipement doit posséder une connexion à la terre ⏚, ainsi qu'une liaison « neutre » identifiable.**
- **La prise électrique qui alimente l'appareil doit être proche de celle-ci et accessible.**

Câble secteur de pays autres que les Etats-Unis

L'équipement est livré avec un câble secteur au standard IEC, moulé mâle/femelle.
Si vous souhaitez changr la prise mâle de votre cordon, voici les codes couleurs des fils :

Le fil VERT/JAUNE est connecté à T (Terre)
Le fil BLEU est connecté à N (Neutre)
Le fil MARRON est connecté à P (Phase)

Attention si l'appareil a 2 alimentations, s'assurer que les cordons soient branchés sur la même phase.

Erklärung der Sicherheitssymbole

D

Dieses Symbol weist den Benutzer auf wichtige Informationen hin, die in der begleitenden Dokumentation enthalten sind.

Dieses Symbol zeigt an, dass gefährliche Spannung vorhanden ist.
Es befinden sich keine vom Benutzer zu wartenden Teile im Geräteinneren.
Dieses Gerät sollte nur von geschultem Personal gewartet werden

Sicherheits-Warnhinweise

ACHTUNG
Gefahr von Elektroschocks.
Abdeckungen nicht entfernen
Keine vom Benutzer zu wartende Teile
Wenden Sie sich ausschließlich
an qualifiziertes Personal

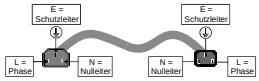
Die angeführten Service-/Reparatur-Anweisungen sind ausschließlich von qualifiziertem Service-Personal auszuführen. Um das Risiko eines lektroschocks zu reduzieren, führen Sie ausschließlich die im Benutzerhandbuch eschriebenen Anweisungen aus, es sei denn, Sie haben die entsprechende Qualifikation. Wenden Sie sich in allen Service-Fragen an qualifiziertes Personal.

- **Um das Risiko eines Elektroschocks zu reduzieren, setzen Sie das Gerät weder Regen noch Feuchtigkeit aus.**
- **Stellen Sie immer sicher, dass das Gerät ordnungsgemäß geerdet und verkabelt ist.**
- **Dieses Equipment muss an eine Netzsteckdose mit ⏚ Schutzleiter angeschlossen werden und einen zuverlässig identifizierbaren Nullleiter haben.**
- **Die Netzsteckdose sollte nahe beim Gerät und einfach zugänglich sein.**

Netzanschluss in anderen Ländern als der USA

Das Equipment wird im Normalfall mit einem Netzkabel mit Standard IEC Anschlussbuchse und einem Standard IEC Anschlussstecker geliefert. Sollten Sie den angeschweißten Stecker auswechseln müssen, entsorgen Sie diesen bitte umgehend. Die farbliche Belegung des Netzkabels ist wie folgt:

GRÜN GELB E = Schutzleiter ⏚
BLAU N = Nulleiter
BRAUN L = P = Phase



Achtung: Wenn das Gerät zwei Anschlussbuchsen hat, stellen Sie bitte sicher, dass beide Netzkabel mit der selben Phase in die Netzsteckdose gesteckt werden.

Explicación de los Símbolos de Seguridad

ESP

Éste símbolo refiere al usuario información importante contenida en la literatura incluida. Referirse al manual.

Éste símbolo indica que voltajes peligrosos están presentes en el interior.
No hay elementos accesibles al usuario dentro.
Esta unidad sólo debería ser tratada por personal cualificado.

Advertencias de Seguridad

ADVERTENCIA
RIESGO DE CHOQUE ELECTRICO
NO QUITAR LAS PROTECCIONNES
ELEMENTOS NO ACCESIBLES AL
USUARIO.
SERVICIO SOLAMENTE A PERSONAL
CUALIFICADO

Las instrucciones de servicio cuando sean dadas, son sólo para uso de personal cualificado. Para reducir el riesgo de choque eléctrico no llevar a cabo ninguna operación de servicio aparte de las contenidas en las instrucciones de operación, a menos que se esté cualificado para realizarlas.
Referir todo el trabajo de servicio a personal cualificado.

- **Para reducir el riesgo de choque eléctrico, no exponer este equipo a la lluvia o humedad.**
- **Siempre asegurarse de que la unidad está propiamente conectada a tierra y que las conexiones de alimentación están hechas correctamente.**
- **Este equipo debe ser alimentado desde un sistema de alimentación con conexión a TIERRA ⏚ y teniendo una conexión neutra fácilmente identificable.**
- **La toma de alimentación para la unidad debe ser cercana y fácilmente accesible.**

Conexión de alimentación en otros países que no sean USA

El equipo es normalmente entregado con un cable de alimentación con un enchufe hembra estándar IEC en un extremo y con una clavija estándar IEC en el otro. Si se requiere eliminar la clavija para sustituirla por otra, disponer dicha clavija de una forma segura.
El código de color a emplear es como sigue:

VERDE/ AMARILLO conectado a E (Conductor de protección a Tierra -Earth en el original-)
AZUL conectado a N (Conductor Neutro -Neutral en el original-)
MARRÓN conectado a L (Conductor Fase -Live en el original-)

Advertencia Si la unidad tuviera dos tomas de alimentación, asegurarse de que ambos cables de alimentación están conectados a la misma fase.

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Simboli di sicurezza: (I)

Questo simbolo indica l'informazione importante contenuta nei manuali appartenenti all'apparecchiatura. Consultare il manuale.

Questo simbolo indica che all'interno dell'apparato sono presenti tensioni pericolose. Non cercare di smontare l'unità.
Per qualsiasi tipo di intervento rivolgersi al personale qualificato.

Attenzione:

ATTENZIONE
RISCHIO DI SHOCK ELETTRICO NON CERCARE DI SMONTARE L'UNITA PER QUALSIASI TIPO DI INTERVENTO RIVOLGERSI AL PERSONALE QUALIFICATO

Le istruzioni relative alla manutenzione sono ad uso esclusivo del personale qualificato. E' proibito all'utente eseguire qualsiasi operazione non esplicitamente consentita nelle istruzioni. Per qualsiasi informazione rivolgersi al personale qualificato.

- **Per prevenire il pericolo di scosse elettriche è necessario non esporre mai l'apparecchiatura alla pioggia o a qualsiasi tipo di umidità.**
- **Assicurarsi sempre, che l'unità sia propriamente messa a terra e che le connessioni elettriche siano eseguite correttamente.**
- **Questo dispositivo deve essere collegato ad un impianto elettrico dotato di un sistema di messa a terra efficace.**
- **La presa di corrente deve essere vicina all'apparecchio e facilmente accessibile.**

Connessione elettrica nei paesi diversi dagli Stati Uniti

L'apparecchiatura normalmente è spedita con cavo pressofuso con la presa e spina standard IEC. Nel caso della rimozione della spina elettrica, gettarla via immediatamente osservando tutte le precauzioni del caso.
La leggenda dei cavi è la seguente:

VERDE/GIALLO cavo connesso ad "E" (terra)
BLU cavo connesso ad "N" (neutro)
MARRONE cavo connesso ad "L" (fase)

Attenzione! Nel caso in cui l'apparecchio abbia due prese di corrente, assicurarsi che i cavi non siano collegati a fasi diverse della rete elettrica.

Forklaring på sikkerhedssymboler (DK)

Dette symbol gør brugeren opmærksom på vigtig information i den medfølgende manual.

Dette symbol indikerer farlig spænding inden i apparatet. Ingen bruger servicerbare dele i apparatet på brugerniveau.
Dette apparat må kun serviceres af faglærte personer..

Sikkerhedsadvarsler

FORSIGTIG
RISIKO FOR ELEKTRISK STØD DÆKPLADER MÅ IKKE FJERNES INGEN BRUGER SERVICERBARE DELE SERVICE MÅ KUN UDFØRES AF FAGLÆRTE PERSONER

Serviceinstruktioner er kun til brug for faglærte servicefolk. For at reducere risikoen for elektrisk stød må bruger kun udføre anvisninger i betjeningsmanualen.
Al service skal udføres af faglærte personer.

- **For at reducere risikoen for elektrisk stød må apparatet ikke udsættes for regn eller fugt.**
- **Sørg altid for at apparatet er korrekt tilsluttet og jordet.**
- **Dette apparat skal forbindes til en nettilslutning, der yder BESKYTTENDE JORD ⏚ og 0 forbindelse skal være tydeligt markeret.**
- **Stikkontakten, som forsyner apparatet, skal være tæt på apparatet og let tilgængelig**.

Nettilslutning i andre lande end USA

Udstyret leveres normalt med et strømkabel med et standard IEC støbt løst hunstik i den ene ende og et standard IEC støbt hanstik i den anden ende. Hvis et af de støbte stik på strømkablet er defekt, skal det straks kasseres på forsvarlig vis. Farvekoden for lederen er som følger:

GRØN/GUL leder forbundet til J (Jord)
BLÅ leder forbundet til 0
BRUN leder forbundet til F(Fase)

Forsigtig Hvis enheden har to lysnetindgange, skal der sørges for at begge ledninger tilsluttes lystnetudgange fra den samme fase.

Förklaring av Säkerhetssymboler (S)

Denna symbol hänvisar användaren till viktig information som återfinns i litteraturen som medföljer. Se manualen.

Denna symbol indikerar att livsfarlig spänning finns på insidan.
Det finns inga servicevänliga delar inne i apparaten.
Denna apparat få endast repareras av utbildad personal.

Säkerhetsvarningar

CAUTION
RISK OF ELECTRIC SHOCK DO NOT REMOVE COVERS NO USER SERVICEABLE PARTS REFER SERVICING TO QUALIFIED PERSONNEL ONLY

Serviceinstruktioner som anges avser endast kvalificerad och utbildad servicepersonal. För att minska risken för elektrisk stöt, utför ingen annan service än den som återfinns i medföljande driftinstruktionerna, om du ej är behörig. Överlåt all service till kvalificerad personal.

- **För att reducera risken för elektrisk stöt, utsätt inte apparaten för regn eller fukt.**
- **Se alltid till att apparaten är ordentligt jordad samt att strömtillförseln är korrekt utförd.**
- **Denna apparat måste bli försörjd från ett strömsystem som är försedd med jordadanslutning ⏚ samt ha en neutral anslutning som lätt identifierbar.**
- **Vägguttaget som strömförsörjer apparaten bör finnas i närheten samt vara lätttillgänglig.**

Strömkontakter i länder utanför USA

Apparaten utrustas normalt med en strömkabel med standard IEC gjuten honkontakt på ena änden samt en standard IEC gjuten hankontakt på den andra änden. Om man måste avlägsna den gjutna hankontkaten, avyttra denna kontakt omedelbart på ett säkert sätt. Färgkoden för ledningen är följande:

GRÖN/GUL ledning ansluten till E (Skyddsjordad ledare)

BLÅ ledning ansluten till N (Neutral ledare)
BRUN ledning ansluten till L (Fas ledare)

Varning! Om enheten har två huvudsakliga elförsörjningar, säkerställ att båda strömkablarna som är inkopplade i enheten arbetar från samma fas.

Turvamerkkien selitys (FI)

Tämä merkki tarkoittaa, että laitteen mukana toimitettu kirjallinen materiaali sisältää tärkeitä tietoja. Lue käyttöohje.

Tämä merkki ilmoittaa, että laitteen sisällä on vaarallisen voimakas jännite. Sisäpuolella ei ole mitään osia, joita käyttäjä voisi itse huoltaa. Huollon saa suorittaa vain alan ammattilainen.

Turvaohjeita

VAROITUS
SÄHKÖISKUN VAARA ÄLÄ AVAA LAITTEEN KANSIA EI SISÄLLÄ KÄYTTÄJÄLLE HUOLLETTAVIA OSIA HUOLTO AINOASTAAN AMMATTILAISEN SUORITTAMANA

Huolto-ohjeet on tarkoitettu ainoastaan alan ammattilaisille. Älä suorita laitteelle muita toimenpiteitä, kuin mitä käyttöohjeissa on neuvottu, ellet ole asiantuntija. Voit saada sähköiskun. Jätä kaikki huoltotoimet ammattilaiselle.

- **Sähköiskujen välttämiseksi suojaa laite sateelta ja kosteudelta.**
- **Varmistu, että laite on asianmukaisesti maadoitettu ja että sähkökytkennät on tehty oikein.**
- **Laitteelle tehoa syöttävässä järjestelmässä tulee olla SUOJAMAALIITÄNTÄ ⏚ ja nollaliitännän on oltava luotettavasti tunnistettavissa.**
- **Sähköpistorasian tulee olla laitteen lähellä ja helposti tavoitettavissa.**

Sähkökytkentä

Laitteen vakiovarusteena on sähköjohto, jonka toisessa päässä on muottiin valettu, IEC-standardin mukainen liitäntärasia ja toisessa päässä muottiin valettu, IEC-standardin mukainen pistoliitin. Jos pistoliitin tarvitsee poistaa, se tulee hävittää heti turvallisella tavalla. Johtimet kytketään seuraavasti:

KELTA-VIHREÄ suojamaajohdin E-napaan
SININEN nollajohdin N-napaan
RUSKEA vaihejohdin L-napaan

Huom! Jos laitteessa on kaksi verkkojännitteen tuloliitäntää, niiden johdot on liitettävä verkkopistorasioihin, joissa on sama vaiheistus.

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Símbolos de Segurança

P

O símbolo triangular adverte para a necessidade de consultar o manual antes de utilizar o equipamento ou efectuar qualquer ajuste.

Este símbolo indica a presença de voltagens perigosas no interior do equipamento. As peças ou partes existentes no interior do equipamento não necessitam de intervenção, manutenção ou manuseamento por parte do utilizador. Reparações ou outras intervenções devem ser efectuadas apenas por técnicos devidamente habilitados.

Avisos de Segurança

As instruções de manutenção fornecidas são para utilização de técnicos qualificados. Para reduzir o risco de choque eléctrico, não devem ser realizadas intervenções no equipamento não especificadas no manual de instalações a menos que seja efectuadas por técnicos habilitados.

- **Para reduzir o risco de choque eléctrico, não expor este equipamento à chuva ou humidade.**
- **Assegurar que a unidade está sempre devidamente ligada à terra e que as ligações à alimentação estão correctas.**
- **O sistema de alimentação do equipamento deve, por razões de segurança, possuir ligação a terra de protecção ⏚ e ligação ao NEUTRO devidamente identificada.**
- **A tomada de energia à qual a unidade está ligada deve situar-se na sua proximidade e facilmente acessível.**

Ligação da alimentação noutros países que não os EUA

O equipamento é, normalmente, enviado com cabo de alimentação com ficha IEC fêmea standard num extremo e uma ficha IEC macho standard no extremo oposto. Se for necessário substituir ou alterar alguma destas fichas, deverá remove-la e elimina-la imediatamente de maneira segura.
O código de cor para os condutores é o seguinte:

Condutor VERDE/AMARELO ligado a E (Terra)
Condutor AZUL ligado a N (Neutro)
Condutor CASTANHO ligado a L (Vivo).

Atenção: Se a unidade tem duas fontes de alimentação assegurar que os dois cabos de alimentação estão ligados a tomadas pertencentes à mesma fase.

Επεξήγηση των Συμβόλων Ασφαλείας

Αυτό το σύμβολο παραπέμπει το χρήστη σε σημαντικές πληροφορίες που συμπεριλαμβάνονται στο συνοδευτικό εγχειρίδιο.

Αυτό το σύμβολο υποδεικνύει ότι στο εσωτερικό υφίστανται επικίνδυνες ηλεκτρικές τάσεις. Στο εσωτερικό δεν υπάρχουν επισκευάσιμα μέρη. Αυτή η μονάδα πρέπει να επισκευάζεται μόνο από ειδικά εκπαιδευμένο προσωπικό.

Προειδοποίηση Ασφαλείας

Οδηγίες επισκευής, όπου παρέχονται, αναφέρονται αποκλειστικά και μόνο σε εξειδικευμένο προσωπικό. Για να μειωθεί ο κίνδυνος ηλεκτροπληξίας, μην εκτελείτε επισκευές παρά μόνο τις συμπεριλαμβανόμενες στο εγχειρίδιο των οδηγιών, εκτός και αν έχετε τα απαραίτητα προσόντα για να το κάνετε. Όλες οι επισκευές να εκτελούνται από ειδικά εκπαιδευμένο προσωπικό.

- **Για να μειώσετε τον κίνδυνο ηλεκτροπληξίας μην εκθέτετε τη συσκευή σε βροχή ή υγρασία.**
- **Πάντα να εξασφαλίζετε τη σωστή γείωση της συσκευής και τη σωστή σύνδεση των συνδέσμων τροφοδοσίας.**
- **Ο εξοπλισμός πρέπει να τροφοδοτείται από ένα σύστημα τροφοδοσίας που να εξασφαλίζει ΠΡΟΣΤΑΤΕΥΤΙΚΗ ΓΕΙΩΣΗ ⏚ και να έχει καθορισμένες θέσεις ουδέτερου και φάσης.**
- **Ο εξοπλισμός που τροφοδοτεί τη συσκευή θα πρέπει να βρίσκεται κοντά στη συσκευή και να είναι εύκολα προσβάσιμος.**

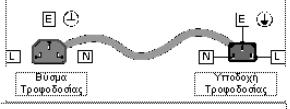
Σύνδεση τροφοδοσίας σε χώρες εκτός των ΗΠΑ

Ο εξοπλισμός συνοδεύεται συνήθως από ένα καλώδιο τροφοδοσίας με ένα σταθερό βύσμα τροφοδοσίας ρεύματος τύπου πυραμίδας στη μια άκρη του και μια σταθερή υποδοχή τροφοδοσίας ρεύματος τύπου πυραμίδας στην άλλη άκρη του. Εάν χρειαστεί να αφαιρέσετε το σταθερό βύσμα τροφοδοσίας μην το επαναχρησιμοποιείτε, θεωρείται άχρηστο. Ο χρωματικός οδηγός για το καλώδιο τροφοδοσίας είναι ο παρακάτω :

ΠΡΑΣΙΝΟΚΙΤΡΙΝΟ καλώδιο συνδέεται στο E (Προστατευτικός Αγωγός Γείωσης)

ΜΠΛΕ καλώδιο συνδέεται στο N (Ουδέτερο Αγωγό)

ΚΑΦΕ καλώδιο συνδέεται στο L (Αγωγό Φάσης)



ΠΡΟΣΟΧΗ! Αν η μονάδα έχει δύο τροφοδοτικά βεβαιωθείτε ότι και τα δύο καλώδια τροφοδοσίας είναι συνδεδεμένα σε εξόδους τροφοδοσίας που βρίσκονται στην ίδια φάση.

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1.2 Mains Power Supplies

The Vega router has two IEC power sockets, one for the main and one for the redundant power supply unit.

The mains Voltage will be auto detected provided it is in the range 100 - 240 Vac and 50 - 60 Hz.

- Caution: Double Pole/Neutral Fusing.
- This equipment has more than one power supply cord. To reduce the risk of electrical shock, disconnect all the power supply cords before servicing.
- Isolate the unit from other product outputs before servicing.
- The IEC power inlets are the mains disconnection devices for this unit.
- To reduce the risk of electric shock, plug each power supply cord into separate branch circuits employing separate service grounds.
- Ensure that all of the router modules and cards are correctly installed and firmly seated before powering on the Vega router.

1.2.1 Supplied Power Cord Color Code

The equipment is shipped with a power cord with a standard molded IEC female plug on one end and a standard mains plug on the other. If you are required to remove the molded mains supply plug, dispose of the plug immediately in a safe manner. The color code for the cord is as follows:

- GREEN/YELLOW lead connected to E (Protective Earth Conductor)
- BROWN lead connected to L (Live Conductor)
- BLUE lead connected to N (Neutral Conductor)

1.3 Lithium Batteries

CAUTION

This equipment contains a lithium battery

There is a danger of explosion if this is replaced incorrectly
Replace only with the same or equivalent type.
Dispose of used batteries according to the manufacturers instructions.
Batteries **shall only** be replaced by trained service technicians

The Vega Video Routers contain a Lithium battery to provide non-volatile memory.

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1.4 Rack Mounting

Do not rack-mount the Vega 2U or 4U routers using only the front rack ears.

1.4.1 Vega 2U Router Rack Mounting

When rack-mounting the Vega router place the Vega router on a suitably specified and installed rack shelf and secure the Vega router to the rack using the front ears.

1.4.2 Vega 4U Router Rack Mounting

The Vega 4U router can be mounted on a suitably specified and installed rack shelf and secured in place using the rack ears. Alternatively it can be mounted on suitably specified and installed rack rail slides.

1.5 Laser Safety

EN60825-1 (2001)
Safety of Laser Products

- Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. Viewing the laser diode with the optical fiber removed and with the aid of optical magnifiers may be hazardous.
- This product is a Class 1 laser product (output power <15mW) at 1270 nm to 1610 nm with a beam divergence >30 mrad.

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1.6 Front Panel Lock

The Vega 2U and 4U routers are fitted with two captive screws (one on the left of the router and one on the right, see Figure 1). These captive screws allow the router front panel to be locked and in normal operation the router must remain locked.

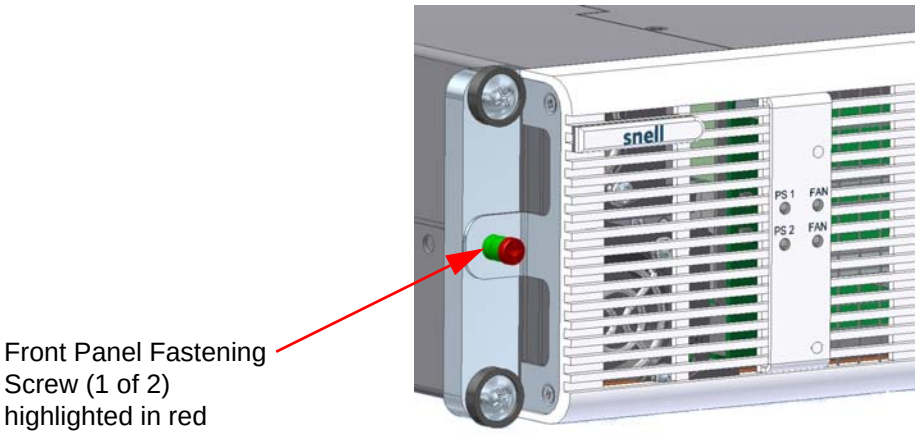

Fig 1. Front Panel Lock (Vega 2U shown)

Important:

- The router must be locked in normal operation to ensure that it complies with safety standards.
- The risk of non-compliance is with the user if the router is left unlocked in normal operation.

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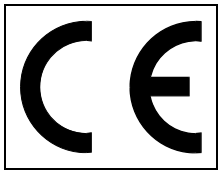
1.7 Safety Standards

This equipment complies with the following standards:



EN60950-1: 2006
Safety of information Technology Equipment Including Electrical Business Equipment.

UL1419 (3rd Edition) - UL File E193966
Standard for Safety - Professional Video and Audio equipment

1.8 EMC Standards

This unit conforms to the following standards:

EN55103-1:2009 (Environment E4)
Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1. Emission

EN55103-2:2009 (Environment E2)
Electromagnetic Compatibility, Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2. Immunity

Federal Communications Commission Rules, 47 CFR: 2009, Part 15, Subpart B (Class A)

1.8.1 EMC Environment

The product(s) described in this manual conform to the EMC requirements for, and are intended for use in:

The controlled EMC environment (for example purpose-built broadcasting or recording studios), and the rural outdoor environment (far away from railways, transmitters, overhead power lines, etc.) E4

The applicable environment is stated in the Technical Profile section of the product operation manual under “EMC Performance Information/Environment.”

1.8.2 EMC Performance of Cables and Connectors

Snell products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

1.8.2.1 Coaxial Cables

Coaxial cable connections (particularly serial digital video connections) shall be made with high-quality double-screened coaxial cables such as Belden 1694 or BBC type PSF1/2M.

1.8.2.2 D-type Connectors

D-type connectors shall have metal shells making good RF contact with the cable screen. Connectors having “dimples” which improve the contact between the plug and socket shells are recommended.

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2. Installation

- Refer to Section 1. Safety on page 7 before connecting power to the unit
- The Installation and Maintenance of the Vega router and any associated equipment must be carried out by persons suitably qualified to work with equipment which may be connected to the mains supply.
- The mounting and installation of the unit must be arranged by the user to comply with all safety regulations of the indigenous authority.

2.1 Ventilation

The Vega 2U and 4U video routers have fans at the rear that pull air in through the front of the unit and exhaust air out of the rear of the router. The power supplies are also fitted with fans working in the same configuration.

Note:

- For ventilation purposes, there must be a gap of at least 50 mm (2 inches) at the front of the Vega routers and 100 mm (4 inches) a the rear of the routers.
- Blocking the ventilation at the front or rear of the router will cause the router to overheat and the router will fail.
- The Vega router must be powered down if both rear fans fail.
- If a power supply fan fails the Vega rear fans will increase in speed to compensate.

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2.2 Dimensions

2.2.1 Vega 2U Dimensions

Important:

- For ventilation purposes, there must be a gap of at least 50 mm (2 inches) at the front of the Vega router.
- You must allow at least 100 mm (4 inches) of space at the rear of the router for cables, connections and ventilation.

The Vega 2U router dimensions are as shown in Fig 2.:

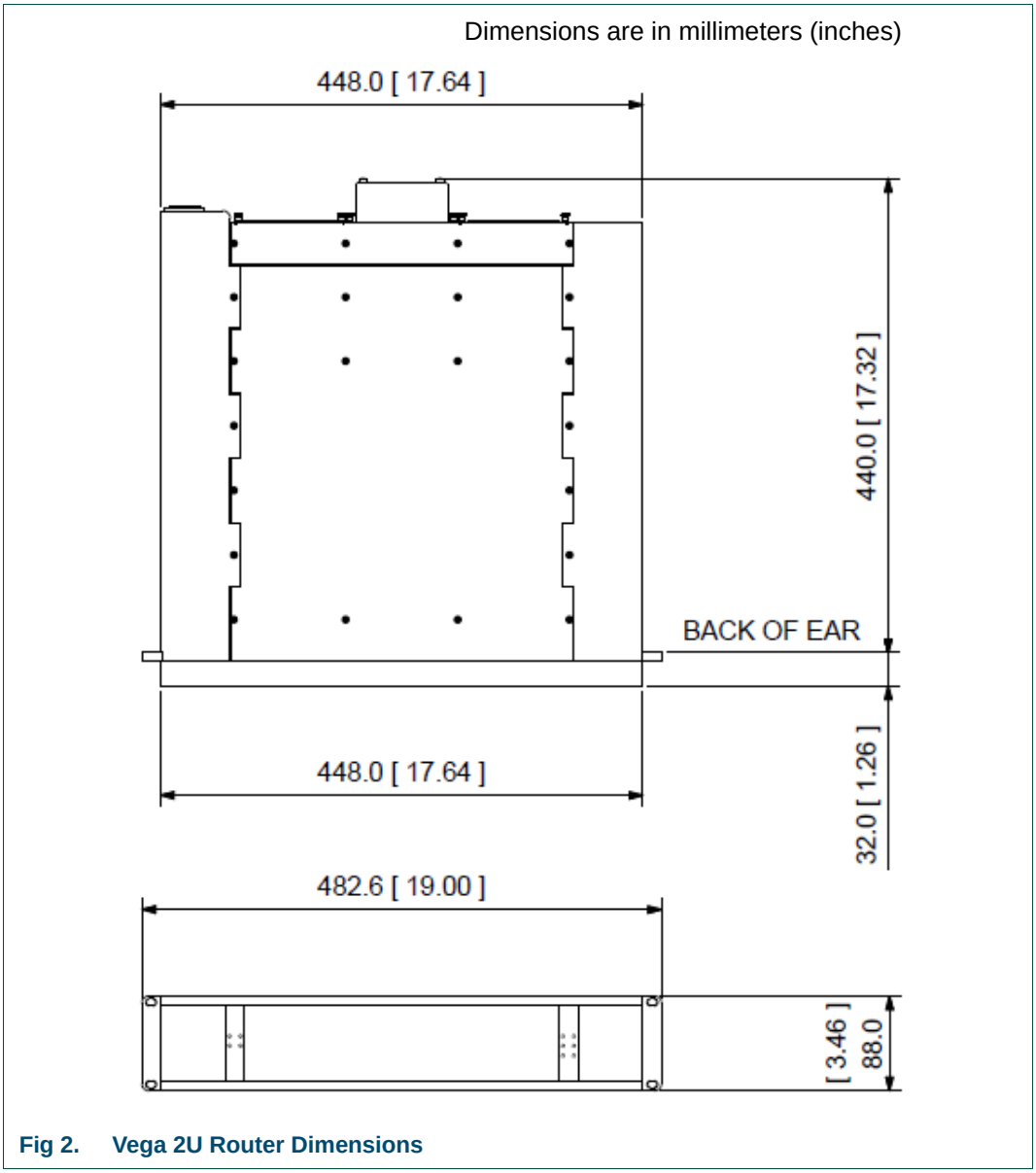

Fig 2. Vega 2U Router Dimensions

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2.2.2 Vega 4U Dimensions

Important:

- For ventilation purposes, there must be a gap of at least 50 mm (2 inches) at the front of the Vega router.
- You must allow at least 100 mm (4 inches) of space at the rear of the router for cables, connections and ventilation.

The Vega 4U router dimensions are as shown in Fig 3.:

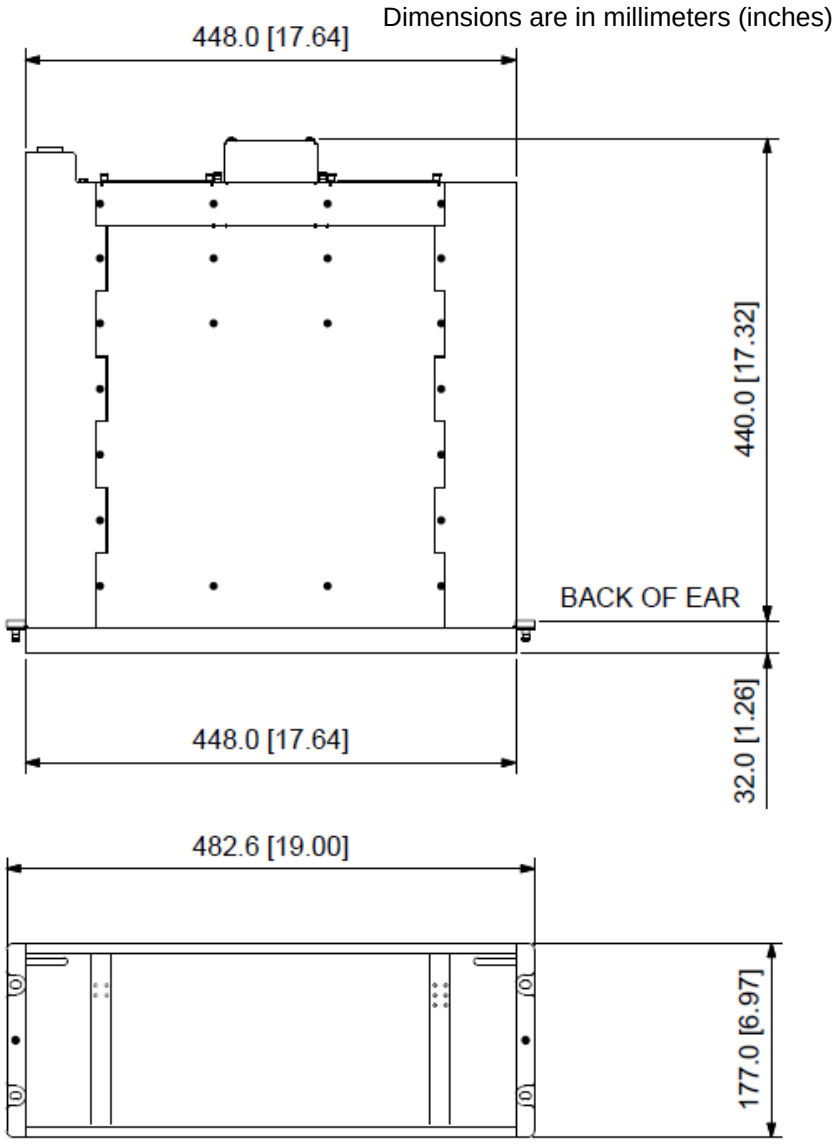

Fig 3. Vega 4U Router Dimensions

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2.3 Rack-mounting the Vega Router

The Vega 2U router must be shelf mounted in a standard 19” rack. The Vega 4U router can either be mounted on rack slides or shelf mounted in a standard 19” rack. These mounting methods are described in the following sections.

2.3.1 Shelf Mounting (2U and 4U Vega Routers)

- Do not rack-mount the Vega router using only the front rack ears.
- Make sure that sufficient space is available for the Vega router in the rack.
- The Vega 2U router weighs 10 kg (22 lbs) for a full frame (without packaging). When lifting the Vega 2U router into a 19" rack use the correct local Health and Safety lifting guidelines.
- The Vega 4U router weighs 18 kg (40 lbs) for a full frame (without packaging). When lifting the Vega 4U router into a 19" rack use the correct local Health and Safety lifting guidelines.

1. Place the Vega router on a suitably specified and installed rack shelf.

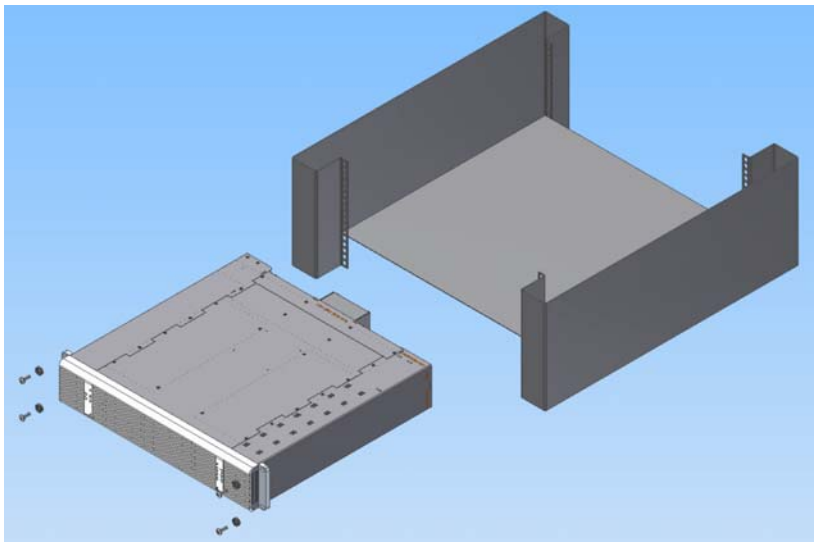

Fig 4. Mounting the Vega Router in a 19” Rack

2. Use the correct rack mount screws or bolts to secure the router ears to the rack.

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2.3.2 Rack Slide Mounting (4U Vega Router Only)

- Do not rack-mount the Vega router using only the front rack ears.
- Make sure that sufficient space is available for the Vega router in the rack.
- The Vega 4U router weighs 18 kg (40 lbs) for a full frame (without packaging). When lifting the Vega 4U router into a 19" rack use the correct local Health and Safety lifting guidelines.

The Vega 4U router can be mounted in a rack using rack slide rails allowing the router to be slid forward in the rack for easy access.

Two lengths of slide rail are available from Snell:

- **VG-RKSL192-600** - Rack Mounting Slides, nominal rack depth 600 mm (23.5”)
- **VG-RKSL192-800** - Rack Mounting Slides, nominal rack depth 800 mm (31.5”)

The following instructions are only for use with the Snell rack mounting kits listed above.

Slide Bar Assembly

1. Separate the Chassis Mounting section of each slide from the Rack Mounting section by operating the lock release spring.

Note:

- The Chassis Mounting section of the slide has the lock release spring.
- The Rack Mounting section of the slide has the ball bearing slide carrier.

2. Fit one of the Chassis Mounting sections to one side of the Vega router chassis making sure that the lock release spring is towards the rear of the router (see Figure 5). The fixing screws are supplied pre-fitted to the router (see important note).

Important:

- The supplied screws must be used to avoid damaging the router.
- The long rail kit only requires three of the six supplied screws, the unused screws must be removed from the router and are not used.
- The short rail kit only requires four of the six supplied screws, the unused screws must be removed from the router and are not used.

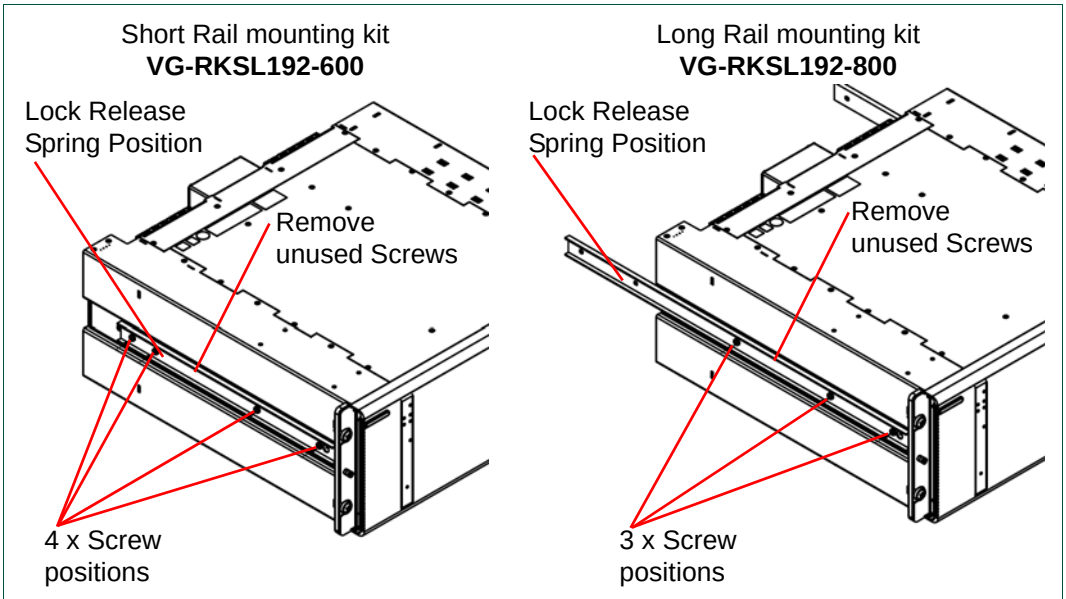

Fig 5. Fitting Chassis Mounting Section

3. Repeat step 2. for the other side of the Vega router.

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Rack Mount Assembly

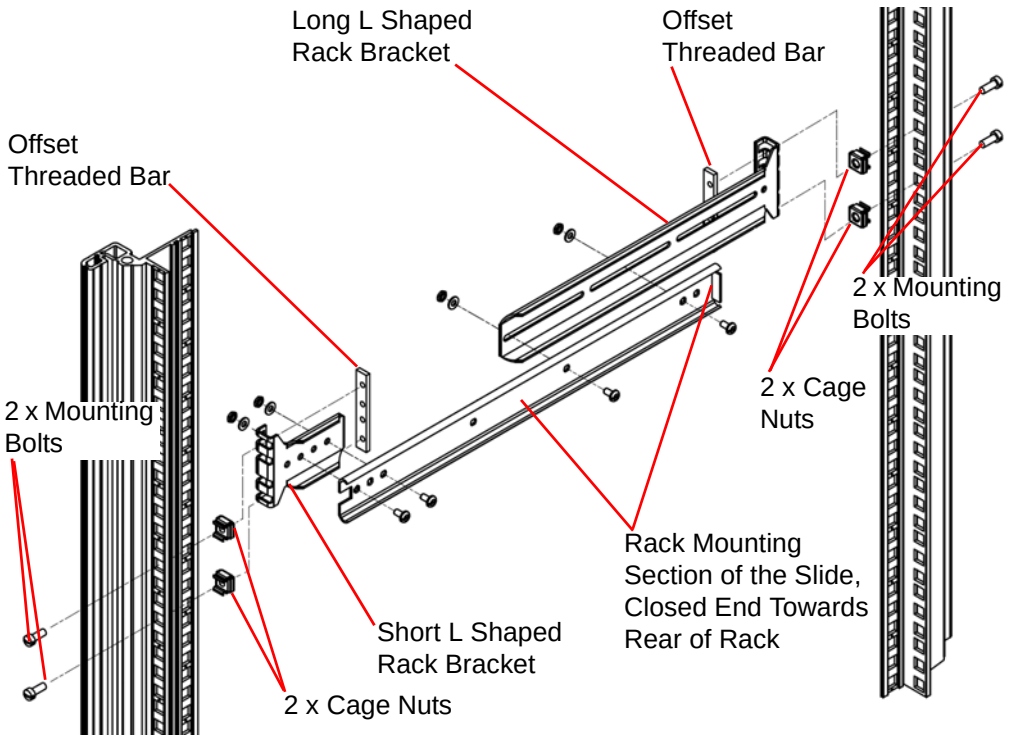

Fig 6. Left Front and Rear Rack Uprights (Viewed from Front of Rack)

1. Fit two cage nuts to the rear of the front upright of the rack.
2. Fit the L shaped Short Rack Bracket by passing two mounting bolts through the cage nuts through the bracket and into the offset threaded bar. The offset threaded bar must be oriented for the minimum equipment width option.
3. Repeat steps 1. and 2. for the second Short Front Bracket.
4. Fit two cage nuts to the rear rail of the rack.
5. Fit the long L shaped Rack Bracket by passing two mounting bolts through the cage nuts through the bracket and into the offset threaded bar. The offset threaded bar must be oriented for the minimum equipment width option.
6. Repeat steps 4. and 5. for the second Long L shaped Rear Bracket.
7. Fit the Rack Mounting section of the slide between the front and rear L shaped Rack Brackets using four M4 bolts, washers and screws. The closed end of the Rack Mounting section must be towards the rear of the rack, see Figure 6.

Note: You may only be able to use one of the two pairs of holes in the front L shaped bracket as the other pair may obscure one of the available holes in the rear L shaped bracket.

8. Repeat step 7. for the second Rack Mounting section of the slide.
9. Move the ball bearing carriers on each Rack Mounting section of the slide to the front of the rack.
10. Line up both Rack Mounting sections with the front of the Chassis Mounting sections, engage them and push gently home. The locking springs may click and lock as they locate in the slides. If they lock release the locking springs and slide the router fully into the rack.

Note: Any misalignment of the router in the rack can be compensated for by partially releasing the screws and operating the slide a number of times before retightening the screws.

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11. When you have confirmed correct slide operation check that all the screws are tight.

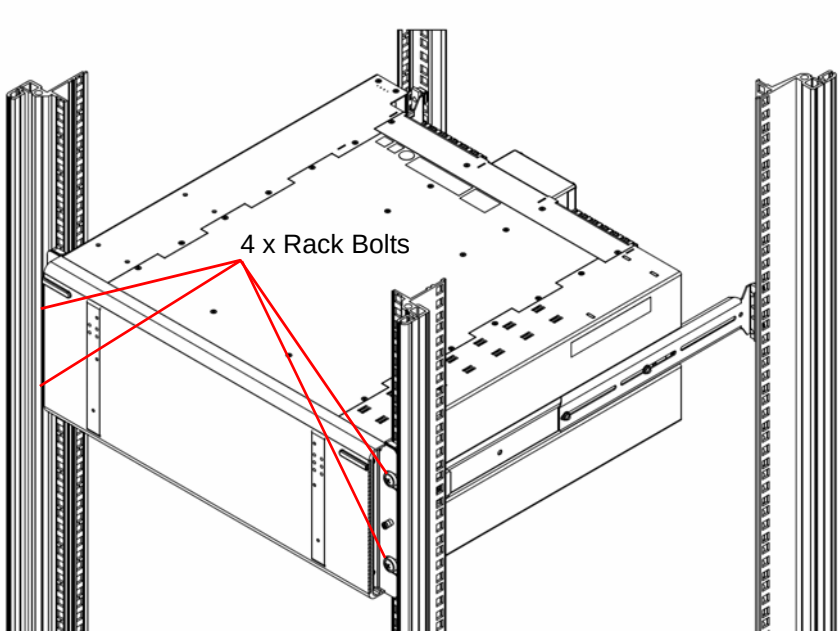

Fig 7. 4U Vega Installed in Rack (Long Slide Kit Shown)

12. Fit the four rack bolts to secure the router rack ears to the rack, see Figure 7.

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2.4 Transit Brackets

There are two Transit Brackets in the Vega router that restrain the crosspoint and controller cards during transit (see Figure 8). These transit brackets must be removed before the Vega router is powered on.

1. Loosen the captive front panel fastening screws on the left and right of the router (see Figure 1 on page 12 for details).
2. Open the front panel of the Vega router by pulling it outwards and swinging it down.

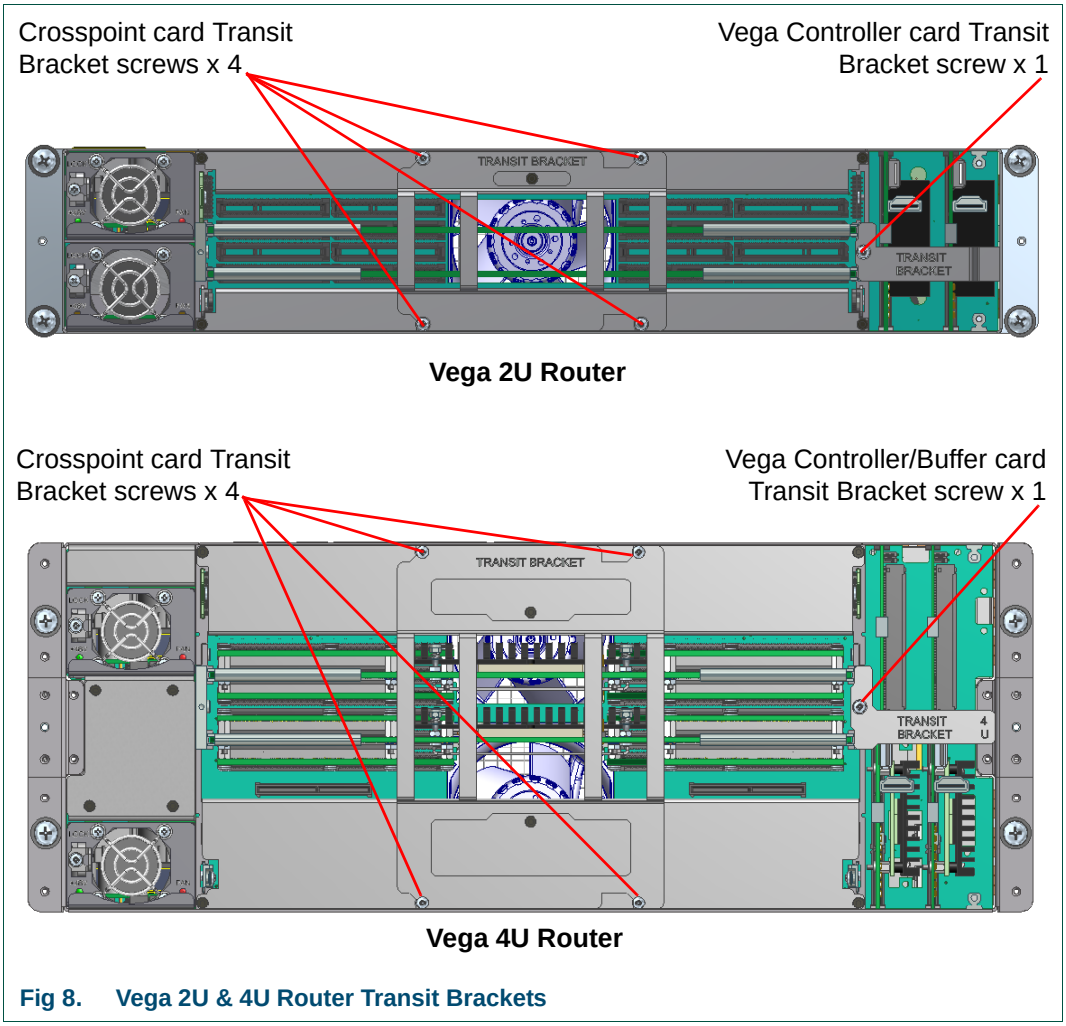
Crosspoint card Transit Bracket screws x 4
Vega Controller card Transit Bracket screw x 1
TRANSIT BRACKET
TRANSIT BRACKET
Vega 2U Router
Crosspoint card Transit Bracket screws x 4
Vega Controller/Buffer card Transit Bracket screw x 1
TRANSIT BRACKET
TRANSIT BRACKET 4 U
Vega 4U Router

Fig 8. Vega 2U & 4U Router Transit Brackets

3. Loosen but do not remove the four Crosspoint transit bracket screws and slide the transit bracket to the right to remove it.
4. Tighten the crosspoint transit bracket screws back up again and keep the bracket somewhere safe in case the Vega router needs transporting in the future.
5. Unscrew the Vega controller card transit bracket screw and remove the transit bracket. Keep the bracket and screw with the crosspoint card transit bracket in case the Vega router needs transporting in the future.
6. Close the router front panel.
7. Tighten the captive front panel fastening screws on the left and right of the router (see Figure 1 on page page 12 for details) to lock the front panel.
8. Refitting the transit brackets for transportation is the reverse of the removal process.

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2.5 Power and Fuses

The mains Voltage will be automatically detected provided it is in the range of 100 - 240 Vac and 50 - 60 Hz. No voltage adjustment procedure is required.

- Caution: Double Pole/Neutral Fusing.
- Before connecting power to the router, refer to the safety warnings in section1.
- Ensure that all of the router modules and cards are correctly installed and firmly seated before powering on the Vega router.

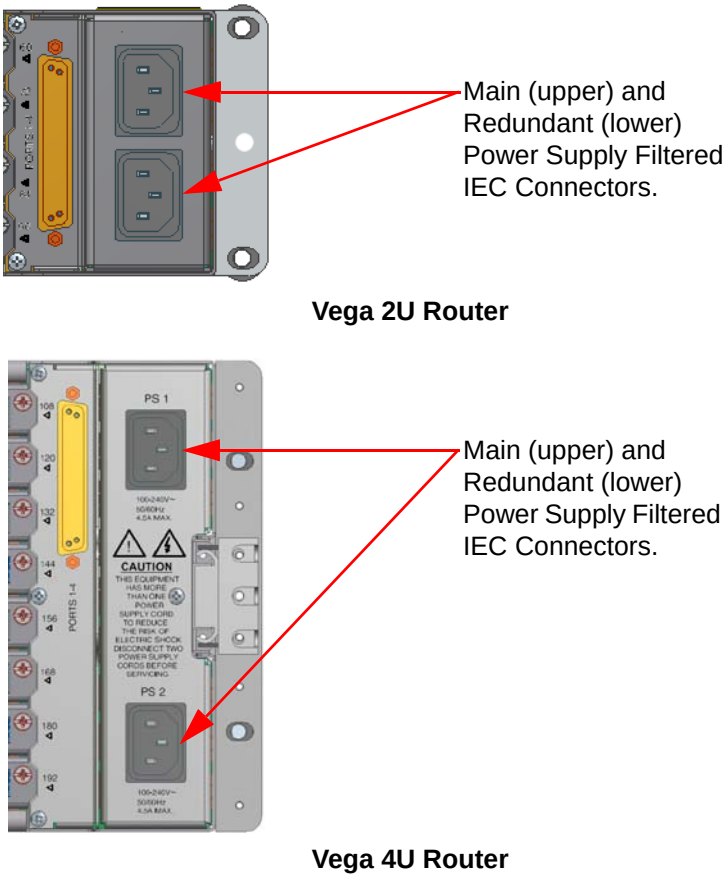

Fig 9. IEC Power Supply Connectors

Each IEC connector supplies an independent feed of power to each of the two power supply modules as shown in Figure 10. The filtered IEC320 mains power connectors are suitable for standard IEC power cables. The IEC power inlet is the mains disconnection device for this unit.

There are two 15 A fast blowing fuse inside the power supply (one in the Live and one in the Neutral line) that cannot be replaced by the user, see section 2.5.1 for details on removing a power supply.

The router supports dual power supplies for redundancy. This is an option and so a second PSU may not be fitted.

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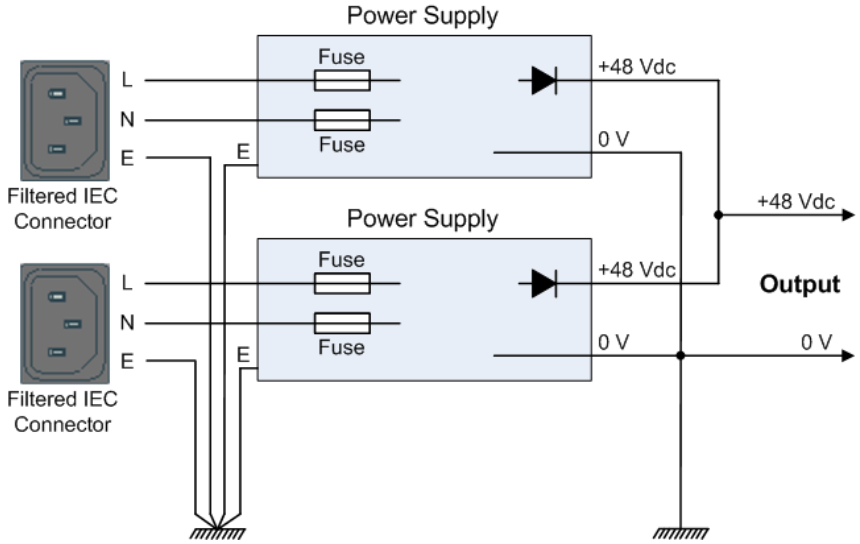

Fig 10. IEC Power Supply Schematic (Main and Redundant PSUs fitted)

2.5.1 Power Supply Replacement

The Vega Video Routers can have up to two power supplies, a main and redundant in case of PSU failure.

Power supplies can be safely hot-swapped without the need for the system to be powered down (only if two power supplies are fitted and at least one is still working).

- Caution: Double Pole/Neutral Fusing.
- Once the failed PSU has been removed PSU redundancy will be lost until a new PSU is fitted:
  - **VG-PSU096-A** - Vega 2U Replacement PSU part number
  - **VG-PSU192-A** - Vega 4U Replacement PSU part number
- If a power supply fan fails the Vega rear fan will increase in speed to compensate.
- The fan will continue to run for 10 to 20 seconds after the power supply is removed from the router as 48 Vdc remains present for a short time.

1. If a power supply or power supply fan fails on a Vega router the Status LEDs on the left of the Vega front panel will indicate which has failed (Figure 11 and Table 1.).

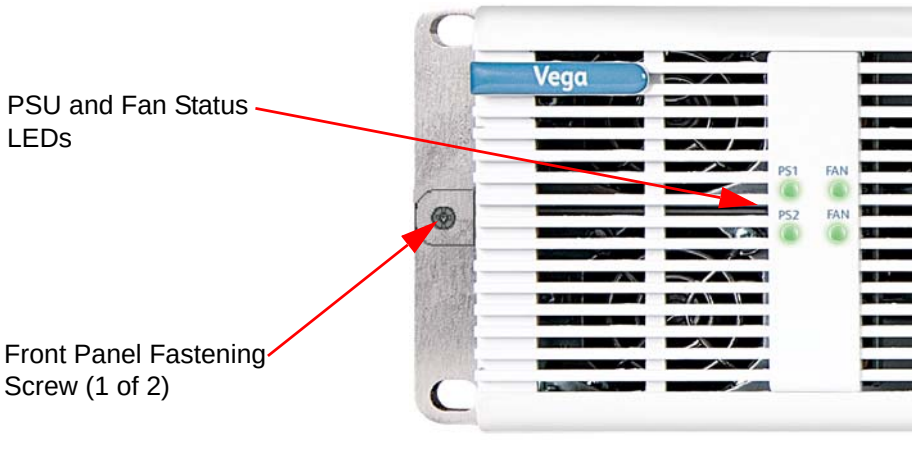

Fig 11. PSU Status Indication (2U Vega shown)

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Status LEDs	Function
PS1 LED (upper PSU)	• **Green** = PSU 1 +48 Vdc output working • **Off** = PSU 1 not fitted • **Red** = PSU 1 +48 Vdc output not present **Possible Causes:** PSU 1 PSU board fuse(s) blown (Not user replaceable) PSU 1 mains cable not connected PSU 1 has failed
Fan (upper PSU Fan)	• **Green** = Fan running** • **Off** = PSU 1 not fitted • **Red** = Failed ****Note**: If the associated PSU has failed or has no mains input the fan will still run from the common 48 Vdc output.
PS2 LED (lower PSU)	• **Green** = PSU 2 +48 Vdc Output Working • **Off** = PSU 2 not fitted • **Red** = PSU 2 +48 Vdc Output not present **Possible Causes**: PSU 2 PSU board fuse(s) blown (Not user replaceable) PSU 2 mains cable not connected PSU 2 has failed
Fan (lower PSU Fan)	• **Green** = Fan running** • **Off** = PSU 2 not fitted • **Red** = Failed ****Note**: If the associated PSU has failed or has no mains input the fan will still run from the common 48 Vdc output.

Table 1. Vega Status LEDs

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2. Loosen the captive front panel fastening screws on the left and right of the router (see Figure 11).
3. Open the front panel of the Vega router by pulling it outwards and swinging it down.

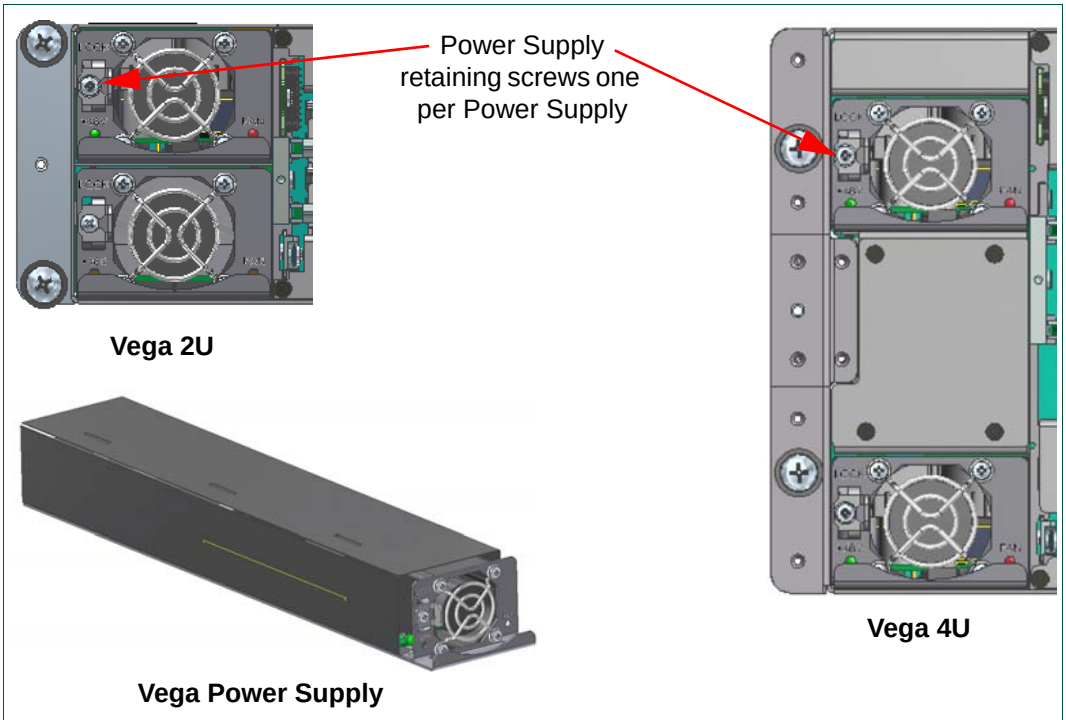

Fig 12. Vega 2U and 4U Router PSU Replacement

- Caution: Double Pole/Neutral Fusing.
- The fan will continue to run for 10 to 20 seconds after the power supply is removed from the router as 48 Vdc remains present for a short time.
- Once the Power Supply has been removed do not place your hands or any item inside the space left by the power supply as mains voltages are present inside the router.

4. Unscrew the power supply retaining screw on the failed power supply (Figure 12).
5. Slide the lock to the **Right** to release the failed power supply.
6. Pull the failed power supply out of the Vega router while supporting the power supply from underneath.
7. Slide the replacement power supply into the Vega router and into the connectors at the rear of the router.
8. Slide the lock to the **Left** to lock the power supply into position.
9. Tighten the power supply retaining screw.
10. The status LEDs for the replacement power supply should now turn Green to indicate that the power supply is working correctly.
11. Close the router front panel.
12. Tighten the captive front panel fastening screws on the left and right of the router (see Figure 11) to lock the front panel.

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2.6 Rear Fan Replacement

The Vega 2U router has two fans at the rear (one behind the other) and the Vega 4U router has two fans at the rear (one above the other). For both routers the rear fans pull air in through the front of the unit and exhaust the air out of the rear of the router. The power supplies are also fitted with fans at the front working in the same configuration.

The rear fan assemblies can easily be replaced if required. If one fan fails in a fan assembly the fan assembly should be replaced as soon as possible to maintain the redundancy of the router.

Important:

- The rear fan assembly can be hot swapped but must be replaced within five minutes to ensure the Vega router doesn't overheat.

1. Before removing the fans read the following notes.

- Caution: Double Pole/Neutral Fusing.
- Ensure that you have a replacement rear fan assembly before removing the old fan assembly.

  Vega 2U Fan Module assembly replacement = VG-RMFU - Rear dual fan unit.

  Vega 4U Fan Module assembly replacement = VG-RMFU192 - Rear fan unit.
- The fan blades can continue to spin for a short time after the fan assembly has been removed from the router.

2. Remove the four fan retaining screws highlighted in red in Figure 13

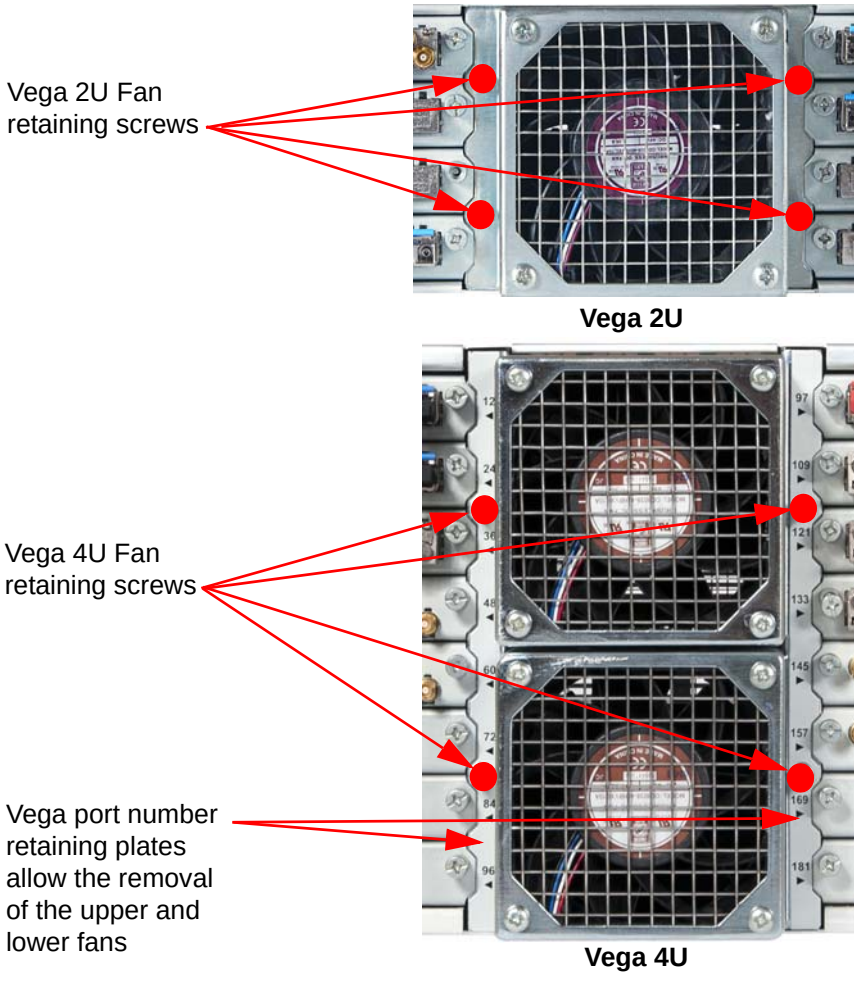
Vega 2U Fan retaining screws
Vega 2U
Vega 4U Fan retaining screws
Vega port number retaining plates allow the removal of the upper and lower fans
Vega 4U

Fig 13. Vega 2U and 4U Router Rear Fans

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3. **Vega 4U only**: remove the two port number retaining plates shown in Figure 13 to free the fan assemblies.
4. Pull the failed fan assembly straight back from the Vega router and support it from underneath. The entire fan assembly will slide out.

Once the fan has been removed do not place your hands or any item inside the space left by the fan as voltages are still present inside the router.

5. Support the replacement fan assembly from underneath and slide it into the router.
6. Ensure that the fan assembly is fully seated in the router. There should be no gap between the Vega rear panel and the flange of the fan assembly.
7. **Vega 4U only**: replace the two port number retaining plates shown in Figure 13.
8. Screw the fan retaining screws into the router (see Figure 13).
9. Check that the fans power up correctly. If the fans are not working repeat the fitting process.

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3. Specifications

Physical	
Mounting height	**Vega 2U**: 2RU **Vega 4U**: 4RU
Dimensions	**Vega 2U**: See page 16 **Vega 4U**: See page 17
Weight	**Vega 2U**: 10 kg (22 lb) maximum, fully loaded (all options) **Vega 4U**: 18 kg (40 lb) maximum, fully loaded (all options)
Power	
Connector	IEC (x 2 – dual redundant power supplies)
Voltage	100 to 240 Vac, 50 to 60 Hz **Vega 2U**: 2.8 A max (8 A max inrush current) **Vega 4U**: 4.5 A max (8 A max inrush current)
AC input power	**Vega 2U**: 230 W max. (Includes all redundancy options) **Vega 4U**: 384 W max. (Includes all redundancy options)
Fusing	Two 15 A fast blowing fuses inside each power supply. One fuse on the Live and one on the Neutral line. The power supply is a sealed unit and the fuses are not user replaceable. **Note**: • Caution Double Pole/Neutral Fusing.
Environmental	
Operating temp	5°C to 40°C
Maintained spec	0°C to 30°C
Storage temp	-20 to +80°C
Relative Humidity	5% to 95% non-condensing
Ventilation	Fan assisted. Front inlet, rear exhaust
Compliance	
EMC - Emissions	EN55103-1 (EU), FCC Part 15 (USA)
EMC - Immunity	EN55103-2 (EU)
Safety	EN60950 (EU), UL1419 (USA)
Hazardous Material	RoHS-6 (UK) – Complies with EU Directive

Table 2. Physical Specifications

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